

In the Claims:

Listing of all claims:

1-25 (Cancelled.)

1 25. (New) A welding, cutting or heating
2 power source, comprising:
3 an input rectifier configured to receive an ac input
4 and to provide a first dc signal;
5 a converter configured to receive the first dc signal
6 and to provide a converter output, and configured to receive
7 at least one control input;
8 an output circuit configured to receive the converter
9 output and to provide a welding, heating or cutting signal;
10 and
11 a controller, including a power factor correction
12 circuit, configured to provide at least one control signal
13 to the converter.

1 26. (New) The apparatus of claim 25, further
2 including an auxiliary power source capable of providing a
3 control power signal at a preselected control signal voltage,
4 regardless of the magnitude of the ac input signal.

1 27. (New) The apparatus of claim 26, wherein the
2 auxiliary power source includes an auxiliary transformer with a
3 plurality of primary taps.

1 28. (New) The apparatus of claim 25, wherein the
2 converter includes a boost circuit.

1 29. (New) The apparatus of claim 25, wherein the
2 output circuit includes a pulse width modulator.

1 30. (New) The apparatus of claim 29, wherein the
2 converter includes a boost circuit.

1 31. (New) The apparatus of claim 25, wherein the
2 output circuit includes an inverter.

1 32. (New) The apparatus of claim 25 wherein the
2 output circuit includes a rectifier.

1 33. (New) The apparatus of claim 25 wherein the
2 output circuit includes a cycloconverter.

1 34. (New) A method of providing a welding, cutting
2 or heating current, comprising:
3 boost converting and power factor correcting an ac
4 input signal to a second ac signal; and
5 changing the second ac signal into a third signal
6 having a current suitable for welding, cutting or heating.

1 35. (New) The method of claim 34 wherein boost
2 converting and power factor includerectifying the ac signal.

1 36. (New) The method of claim 34 further including
2 providing control signals to a converter.

1 37. (New) The method of claim 34, further
2 including providing auxiliary power signal by transforming the ac
3 input signal.

1 38. (New) The method of claim 34, wherein
2 changing includes pulse width modulating.

1 39. (New) The method of claim 34, wherein
2 changing includes inverting.

1 40. (New) A welding, cutting or heating power
2 source, comprising:

3 rectifier means for receiving an ac input providing a
4 first dc signal;

5 converter means for receiving the first dc signal and
6 providing a converter output;

7 control means for controlling the converter means,
8 wherein the control means includes a power factor correction
9 means for power factor correction, connected to the
10 converter means;

11 output means for receiving the converter output and
12 providing a welding, heating or cutting signal.

1 41. (New) The apparatus of claim 40, wherein the
2 converter means includes a boost circuit.

1 42. (New) The apparatus of claim 41, wherein the
2 output means includes a pulse width modulator.

1 43. (New) The apparatus of claim 40, wherein the
2 output circuit includes an inverter.

1 44. (New) The apparatus of claim 43 wherein the
2 output circuit includes a rectifier.

1 45. (New) The apparatus of claim 40 wherein the
2 output circuit includes a rectifier.

3 46. (New) A welding or cutting power source,
4 comprising:

5 an input rectifier configured to receive an ac input
6 having a magnitude over a range of inputs, wherein the range

7 includes a highest magnitude at least twice a lowest
8 magnitude, and to provide a first dc signal;
9 a boost converter, including a boost inductor connected
10 to receive the first dc signal, wherein the boost converter
11 has a dc bus output;
12 an output circuit configured to receive the dc bus
13 output and to provide a welding or cutting signal; and
14 a controller, including a power factor correction
15 circuit, configured to provide at least one control signal
16 to the boost converter.

1 47. (New) The apparatus of claim 46, further
2 including an auxiliary power source capable of providing a
3 control power signal at a preselected control signal voltage for
4 a plurality of magnitudes of the ac input signal.

1 48. (New) The apparatus of claim 47, wherein the
2 auxiliary power source includes an auxiliary transformer with a
3 plurality of primary taps.

1 49. (New) The apparatus of claim 46, wherein the
2 output circuit includes a switched circuit connected across the
3 dc bus, and a transformer having a primary connected in the
4 switched circuit.

1 50. (New) The apparatus of claim 49, wherein the
2 switched circuit is a pulse width modulator.

1 51. (New) The apparatus of claim 49, wherein the
2 output circuit includes an output rectifier connected to a
3 secondary of the transformer.

1 52. (New) The apparatus of claim 51, wherein the
2 switched circuit includes an inverter.

1 53. (New) The apparatus of claim 51 wherein the
2 output circuit includes an inductor connected to the output
3 rectifier.

1 54. (New) The apparatus of claim 46 wherein the
2 output circuit includes a cycloconverter.

1 55. (New) The apparatus of claim 54, further
2 comprising a first output stud connected to the inductor, and
3 disposed to be connected to one of a torch and a ground clamp,
4 and a second output stud, disposed to be connected to the other
5 of the torch and a ground clamp.

1 56. (New) A welding, cutting or heating power
2 source capable of receiving a range of input voltages,
3 comprising:

4 an input rectifier configured to receive an ac
5 input, wherein the range includes a highest magnitude and a
6 lowest magnitude, and wherein the highest magnitude is at
7 least twice the lowest magnitude, and wherein the rectifier
8 is configured to provide a first dc signal;

9 a boost converter connected to receive the first
10 dc signal and provide a second dc output across positive bus
11 and a negative bus, wherein the boost converter is
12 configured to receive at least one control input, and
13 wherein the boost converter includes a boost inductor having
14 a first end in electrical communication with the rectifier,
15 and the boost inductor has a second end in electrical
16 communication with a switch, wherein when the switch is
17 closed the second end is in electrical communication with
18 negative bus, and wherein the second end is in electrical
19 communication with a diode, and the diode is further in
20 electrical communication with the positive bus, such that

21 current can flow from the second end through the diode to
22 the positive bus;
23 a switched circuit, connected to receive the dc
24 bus;
25 an output transformer, having a primary connected
26 to receive a second ac signal from the switched circuit and
27 to provide a third ac signal having a current suitable for
28 welding or cutting on a secondary;
29 an output rectifier connected to the secondary,
30 that provides a third dc signal;
31 a controller, including a power factor correction
32 circuit, configured to provide at least one control signal
33 to the converter; and
34 an auxiliary power source capable of providing a
35 control power signal at a preselected control signal
36 voltage, for a plurality of input voltages.

1 57. (New) The apparatus of claim 56, further
2 including an auxiliary transformer with a plurality of primary
3 taps, wherein the auxiliary power controller is in electrical
4 communication with the plurality of primary taps.

1 58. (New) The apparatus of claim 57, wherein the
2 switched circuit includes a pulse width modulator.

1 59. (New) The apparatus of claim 58, wherein the
2 range of input voltages is 230 volts to 575 volts.

1 60. (New) The apparatus of claim 58 wherein the
2 output circuit includes an output inductor that receives
3 rectifier.

1 61. (New) The apparatus of claim 60, wherein the
2 dc output is provided across a first stud and a second stud,

3 wherein the first stud is disposed to be connecp2260Xdone of a
4 torch and a ground clamp, and the second output stud is disposed
5 to be connected to the other of the torch and a ground clamp.

In the Drawing:

Please add new Figure 6, shown on an attached sheet.